

## Studies on innocent praecordial vibratory murmurs in children

Sir,

The tabulated standard errors of the mean (SEM) of the pre-ejection period (PEP) (papers by van der Hoeven *et al.*, *British Heart Journal* (1973), **38**, 669 and 679) imply remarkably similar standard deviations for each age subgroup. This might suggest that the standard deviation of the 52 controls rather than that of each age subgroup was used to calculate the standard errors of the PEPs<sup>1</sup>. Because of the brevity of the summary, an explicit account of the significance test of the 15 innocent praecordial vibratory murmurs versus the 52 controls would permit a more critical review.

Calculations also show discrepancies between published and calculated values of the SEMs of both left ventricular ejection time (LVET) and PEP for both the 15 innocent praecordial vibratory murmurs and the 15 matched controls<sup>2</sup>.

Most importantly, analysis of the published complete data<sup>2</sup> on the 15 innocent praecordial vibratory murmurs and 15 matched controls refutes the authors' claim of a significant difference at the level  $P=0.05$  between the PEPs. No significant difference at the 0.05 level was found using a paired t-test. An independent two-tailed t-test also revealed no significant difference at the 0.05 level. Only with a one-tailed test was significance found at the 0.05 level. However, the use and justification of a one-tailed test is not at all evident in the papers.

Therefore, we query the authors' statistical method from which significance was found in the matched control series as well as the unmatched series.

Dean F. Wong, Elinor M. Swan,  
and Adele Csima,  
Division of Cardiology,  
The Hospital for Sick Children;  
and  
Department of Preventive Medicine  
and Biostatistics,  
University of Toronto,  
Toronto, Canada.

<sup>1</sup>Table 1, *British Heart Journal*, **35**, p. 673.

<sup>2</sup>Table 1, *British Heart Journal*, **35**, p. 682.

This letter was shown to G. M. A. van der Hoeven and his colleagues, who reply as follows:

Sir,

We appreciate the comments of Mr. Wong and colleagues on our papers on innocent praecordial vibratory murmur in children.

For the group of 85 normal children (Group A), whose ages are between 1 and 20 years, the calculated relation between pre-ejection period (PEP) and heart rate (HR) is

$$\text{PEP} = -0.33\text{HR} + 113 \text{ (ms)} \text{ (Eq. 1)}$$

$$\text{Syx}^1 = \text{SD (PEPc)} = 11.7.$$

Using this we found PEP values corrected for heart rate

$$\text{PEPc} = \text{PEP} + 0.33\text{HR} \text{ (Eq. 2)}$$

We used the  $\text{Syx} = 11.7$  of the total group to calculate the SEM's for each subgroup, despite smaller actual standard deviations of the 4 subgroups. The SD for PEP values and the SD for PEPc values were for the four subgroups resp.:

10.4, 10.1, 11.6, 7.07 and 9.3, 8.9, 11.5, 6.6.

The rationale for taking the larger value was to take into account possible future interobserver differences and the fact that each subgroup consists only of a very small number of subjects. We regret not having mentioned these reasons explicitly in our papers.

In the second paper (2), we compared the PEP values of 15 children with innocent praecordial vibratory murmurs and a subgroup of 52 normal children, between 1 and 10 years, taken from the total group A. The regression equation for this subgroup B is:

$$\text{PEP} = -0.32\text{HR} + 110 \text{ (ms)} \quad \text{Syx} = 9.0.$$

From this group B, a second subgroup of 15 children was taken to serve as an age matched control group for the 15 children with innocent praecordial vibratory murmurs.

The difference in PEP between children without and with an innocent praecordial vibratory murmur is calculated using PEPc (Eq. 2).

The heart rate corrected PEP values and the standard deviations for all groups are:

<sup>1</sup> $\text{Syx}$  = sample standard deviation from regression.

	Age	Mean age	No.	PEPc	SD (PEPc)
Group A	1-20	9.1	85	113.2	11.7
Group B	1-10	6.0	52	110.3	9.04
Controls	3-10	6.2	15	107.9	8.63
IPVM	3-10	5.9	15	100.6	11.94

IPVM—Innocent praecordial vibratory murmurs.

Using the two-tailed Student's *t*-test for independent samples the values of PEPc for the children with innocent praecordial vibratory murmurs are significantly different with respect to the PEPc value of group B ( $P < 0.01$ ).

We concluded that children with innocent praecordial murmurs have a shorter PEP than children without one. Knowing this, a one-tailed Student *t*-test may be used to compare the controls and the innocent praecordial vibratory murmurs. The PEPc of the children with innocent praecordial vibratory murmurs is significantly shorter than matched controls ( $P < 0.05$ ).

Using a non-parametric method (Wilcoxon signed rank test) the same conclusion may be drawn.

G. M. A van der Hoeven and  
C. de Monchy,  
Institute of Medical Physics TNO,  
PO Box 5011,  
Utrecht, Holland.

## Successful aortic valve replacement for aortic regurgitation associated with osteogenesis imperfecta

Sir:

The paper by Weisinger *et al.* (*British Heart Journal*, 1975, **37**, 475) is similar to a published report by me (Pijoan de Beristain, 1973). This paper described a mother and son with aortic regurgitation associated with osteogenesis imperfecta. The mother died in 1960 but the son was operated on successfully in 1966 and is still alive and doing well. The surgeon's description of the aortic wall was similar to that of Weisinger *et al.* and also to that found in Marfan's disease.

I believe that in every case of isolated aortic regurgitation the stigmata of Marfan's syndrome

and osteogenesis imperfecta must be looked for.

Carlos Pijoan de Beristain,  
Servicio de Cardiología,  
Policlinica del Sagrado Corazon de Jesus,  
Barcelona-11,  
Spain.

### Reference

- Pijoan de Beristain, C. (1973). Association of aortic insufficiency with osteogenesis imperfecta in 2 members of the same family. *Revista Española de Cardiología*, **26**, 405.